

IN THE CLAIMS

Claims 1-10 (Canceled).

11 (Currently Amended). An apparatus comprising:

an execution circuit to receive and execute a thread of instructions, wherein the execution circuit transmits a semaphore request message and places the thread in an inactive state in response to the thread of instructions requiring a resource having an associated semaphore; and

a semaphore entity coupled with the execution circuit to receive the semaphore request message from the execution circuit and to selectively grant control of the semaphore in response to the semaphore request message by transmitting a semaphore acknowledge message to the execution circuitry, wherein the execution circuitry, in response to receiving the semaphore acknowledge message, removes the thread of instructions from the inactive state, and grants the resource to the thread when the resource becomes available, ~~said execution entity to release the thread in response to the thread finishing with the resource only if the thread is not dependent on any subsequent threads and resumes execution of the thread of instructions including accessing the resource associated with the semaphore.~~

12 (Original). The apparatus of claim 11 further comprising: at least one additional execution circuit to execute threads of instructions; and a thread dispatcher coupled with the execution circuit and at least one additional execution circuit to dispatch threads for execution by selected execution circuits.

Claim 13 (Canceled).

14 (Original). The apparatus of claim 11 wherein when the thread of instructions is in the inactive state, execution of the instructions ceases and the execution circuitry does not poll the semaphore entity to determine a status of the semaphore request message.

Claims 15-21 (Canceled).

22 (New). An apparatus comprising:

an execution circuit to receive and execute a thread of instructions, wherein the execution circuit transmits a semaphore request message and places the thread in an inactive state in response to the thread of instructions requiring a resource having an associated semaphore; and

a semaphore entity coupled with the execution circuit to receive the semaphore request message from the execution circuit and to selectively grant control of the semaphore in response to the semaphore request message by transmitting a semaphore acknowledge message to the execution circuitry, wherein the execution circuitry, in response to receiving the semaphore acknowledge message, removes the thread of instructions from the inactive state and grants the resource to the thread when the resource becomes available, wherein when the thread of instructions is in the inactive state, execution of the instructions ceases and the execution circuitry does not poll the semaphore entity to determine a status of the semaphore request message.

23 (New). The apparatus of claim 22 further comprising: at least one additional execution circuit to execute threads of instructions; and a thread dispatcher coupled with the execution circuit and at least one additional execution circuit to dispatch threads for execution by selected execution circuits.

24 (New). The apparatus of claim 22 wherein the execution circuitry, in response to receiving the semaphore acknowledge message, resumes execution of the thread of instructions including accessing the resource associated with the semaphore.